the fossil remains of the animals buried in the newer tertiary strata, established the fact that in Europe and Asia, during the period antecedent to any natural evidence of the existence of man, the same peculiar forms of mammalia, which he had cited as now characteristic of that tract of dry land, were distributed abundantly over that great natural continent, from which England had not then become separated. That in South America, instead of elephants, rhinoceroses, oxen, deer, bears, hyænas, &c., there were found, in the freshwater deposits of the corresponding period, fossil remains of sloths, armadillos, ant-eaters, many of them of larger size than the existing kinds, and some, as the megatherium *e. g.*, gigantic. That in Australia the bone-caves and newer tertiary deposits had already revealed fossil remains of both existing and extinct "marsupial" animals, some also of gigantic bulk, and all allied or belonging to the present peculiar genera of that continent. But that no fossil relic of any genus or species of quadruped known in the rest of the world had been found in Australia. Lastly, in New Zealand, the strata contemporary with those from which the fossil quadrupeds above mentioned had been obtained, had not been found to contain the fossil remains of any species of land quadruped, but abounded in the remains of the wingless birds allied to the little Apteryx, now peculiar to New Zealand, but of larger dimensions, and some towering to the extraordinary height of eleven feet.

MISCELLANEOUS.

Notice of specimens of the Wheat Midge from Nova Scotia.

By J. W. Dawson.

This destructive little creature has, within the last four or five years, extended its ravages to Nova Scotia. It made its appearance first in the western counties, and has gradually extended its limits eastward. It is now found in every part of the province, and has, in some districts, caused an almost total abandonment of wheat culture. The specimens accompanying this notice were reared from the larva state; and as I believe this has not often been attempted with success, I shall shortly state the means by which they were obtained.

When I first became acquainted with this insect, I procured specimens of the full-grown larvæ and placed them in a phial, with the view of observing their assumption of the perfect state in spring. None of them however appeared, and I subsequently learned that similar experiments had been tried without success; the belief among entomologists being, that the larva descends into the ground to complete its changes. I could not however ascertain that this belief had been confirmed by actual experiment or observation.

To satisfy myself on this point, (obviously of importance in reference to the means which may be devised for destroying these animals,) I obtained a fresh supply of the larvæ in that motionless and apparently torpid state in which they are found in the ripe wheat in autumn. In the month of November, a few dozens of these larvæ were

placed on the surface of moist soil in a flower-pot, in which a carnation was growing. In the course of two days they had, with the exception of a few which were crushed or otherwise injured, descended into the ground, leaving their delicate membranous cases on the surface. Their power of burrowing having been thus ascertained, they were allowed to remain undisturbed during winter, the spot where they had disappeared being covered with a glass shade. During winter the flower-pot was watered as the growth of the carnation required.

A similar experiment having been tried in another pot, the insects were sought for in the ground after their disappearance. Very few were found, and these had still the larva form. They were however most flexible, and showed some degree of activity. On being placed on the surface they endeavoured to burrow, by means of a worm-like motion, and in doing so they seemed to have the power of fixing the anterior part of the body pretty firmly to the soil. They were found to have penetrated to the depth of about an inch. It thus appeared that the stiffness and torpidity of the larvæ in the ripe grain are but temporary, and that when they fall from their place within the chaff scales, upon the moist ground, and cast their skins, they acquire the activity and strength necessary for penetrating into the soil, while still in the larva form.

The insects were not again seen until the last week of June, when they began to appear in the imago state, and as early as the 10th of July the whole had emerged. At that date there was no wheat in blossom in this vicinity, but the development of the insects had probably been hastened by the warmth and shelter of the house. The emergence of the midges appeared to take place in the evening, but was not actually observed. After they had taken wing, their pupa-cases remained projecting from the ground, and were white and membranous. When examined by the microscope, they showed the true chrysalis form, the wings and other external organs being distinctly marked on them.

The remainder of the larvæ procured in autumn having been kept dry in a paper box, have lost their orange colour, and appear to be quite dead, moisture being apparently absolutely necessary to their entering on the pupa stage.

The insects obtained in the above-described manner were of both sexes. The females agree in their characters with the figures and descriptions of the European *Cecidomyia Tritici**. The males, which I have not seen figured or described, are distinguished by their smaller size, differently-formed abdomen, and longer and more hairy antennæ.

I am not aware whether the mode of hybernation of the wheat midge or "weevil" is generally known to farmers in the United States. If not, it is well worthy of attention, since, by cutting the wheat early, and carefully collecting the larvæ contained in the chaff, and dust separated from the grain, a large proportion of the ensuing

* Curtis, Journ. of Agric. Soc. England.

year's brood may be destroyed. On the other hand, if the larvæ be allowed to be scattered over the fields or barn-yard, a plentiful supply of "weevils" for the next crop is secured. This method was proposed several years since by Prof. Henslow, but I have not been able to ascertain whether it has been used extensively in America.—*Proceedings of the Academy of Natural Sciences of Philadelphia*, vol. iv. p. 210.

On the Characters and Intimate Structure of the Odoriferous Glands of the Invertebrata. By Dr. Leidy.

Nature has supplied most or all animals with some means of defence or protection, through which their destruction is rendered limited. The character of such means varies exceedingly: some are encased in hard armour; some are endowed with great muscular strength, some with great rapidity of movement; others trust to their minuteness, some to their colour; others feign death; many are furnished with formidable instruments, such as teeth, claws, aculei, &c.; others are supplied with organs which emit an odour so offensive that an aggressor is frequently compelled to leave what otherwise would have been its victim, &c. It is to the last-mentioned organs to which I at present wish to direct, for a few moments, the attention of the members; to the organs denominated odoriferous glands of animals. Bodies of this, or of a homologous character, are possessed by nearly all animals, but they are not in all used as a means of defence. They give origin to the odour which appears to be more or less peculiar to each species of animal, and which probably is in some way connected with the sexual instinct. The scent-bag of the *Moschus moschiferus* is the homologue of the glandulæ odoriferæ Tysoni of the human prepuce; the tegumentary mucous glands of mollusca, of annelides, of fishes, the tegumentary glands of reptiles, the perspiratory and sebaceous glands of birds, and of mammals, the odoriferous glands of insects, the anal sacs of carnivora, &c., are all probably of a homologous character.

Although varying in the degree of their complexity in different animals, and in the character of their secretion, yet the essential structure is the same throughout. Consisting of tubes or follicles of basement membrane, their complexity depends upon their greater or lesser length, their being simple or compound, straight or more or less convoluted, and isolated or aggregated, in connection with the mode of supplying to them their nutritive fluid.

On the interior these cavities or tubes are covered with a single layer of nucleolo-nucleated organic cells, the true elaborators or manufacturers of the secreted matters of the glandular bodies.

The secreted matter varies exceedingly in its properties in different animals; in odour being found from that of the perspiratory fluid of man, through a great variety of shades, to that most powerful and odious of all odours, the secretion of the anal glands of the *Mephitis Americana*; in consistence from a semi-fluid state to the gaseous fluid of the *Brachinus crepitans*, &c. It is this which constitutes